Evolution from the Inside:
The Influence of Cellular and Developmental Processes on Evolution

The 1992 MCDB Graduate Student Symposium
April 24–26, 1992

Keynote Address:

Stephen Jay Gould, Harvard University. Dr. Gould will speak on the growing awareness that there are forces influencing evolution that depend on properties of the organism itself.

Session I: Biological Organization and Molecular Evolution

Patricia Foster, Boston University School of Medicine. Dr. Forster will talk about the observation that some mutations occur more frequently when they are adaptive and about candidate models for how these mutations could, in fact, be directed.

Christopher Cullis, Case Western Reserve University. Dr. Cullis will discuss environmental induction of a specific set of heritable DNA alterations in Flax.

Frank Gonzalez, National Institutes of Health. Dr. Gonzalez will discuss molecular drive, a process by which multi-gene families evolve in a manner operationally distinct from natural selection or genetic drift, using the P450 gene family as a model.

Antony Dean, Chicago Medical School. Dr. Dean's work provides an experimental approach for investigating the capacity of how natural selection to discriminate between allelic variants and has implications for how metabolic pathways actually evolve.

Stuart Kauffman, School of Medicine, University of Pennsylvania/ Santa Fe Institute. Dr. Kauffman will talk about the ingluence of properties of genetic networks on the evolution of development.

Session II: Developmental Influences on Evolution

Phillip Saunders, Kings College, UK. Dr. Saunders will discuss the epigenetic landscape and its influence on evolution.

Stuart Newmann, New York Medical College. Dr. Newman will discuss the influence of "generic" physical properties of organisms on the evolution of development.

Mae-wan Ho, Open University, UK. Dr. Ho will discuss lessons from mimicry and phenocopies for development, evolution, and taxonomy.

Pere Alberch, Muser Nacional de Ciencias Naturales, Spain. Dr. Alberch will discuss heterochrony and developmental constraint in the vertebrate limb.

Jeff Hill, Idaho State University. Dr. Hill will discuss heterochrony and the evolution of floral form.

Rudolf Raff, Indiana University. Dr. Raff will discuss heterochrony in sea urchins as an example of evolutionary opportunities afforded by the regulatory hierarchy of developmental processes.

The Self-Wiring Machine:
Development and Functional Organization of Nervous Systems

The 1993 MCDB Graduate Student Symposium
April 16–18, 1993

Keynote Address:

Daniel Alkon, National Institutes of Health. *Varieties of Neuronal Experience.*

Session I: Neurogenesis

Susan K. McConnell, Stanford University. *The Specification of Neuronal Identity in Mammalian Cerebral Cortex.*

Marianne Bronner-Fraser, University of California, Irvine. *Neural Crest Origin and Migration.*

Session II: Axonal Migration and Pathfinding

Mark Tessier-Lavigne, University of California, San Fransisco. *Mechanisms of Axon Guidance in the Developing Vertebrate Spinal Cord.*

Judith S. Eisen, University of Oregon. *Development and Axonal Outgrowth of Identified Motoneurons in Zebrafish.*

Geoffrey M.W. Cook, University of Cambridge. *Segmentation and Neural Development in Vertebrates: Repellent Cues in Axon Guidance.*

Session III: Target Recognition and Synapse Formation

Story C. Landis, Case Western Reserve University. *Developmental Interactions Between Neurons and their Target Tissues.*

Mu-Ming Poo, Columbia University. *Synapse Formation: Surface Interactions and Activity-Dependent Modulation.*

Session IV: Sensory and Motor Systems, Learning and Memory

John Carlson, Yale University. *Olfaction in Drosophila melanogaster.*

Nicholas J. Strausfeld, University of Arizona. *Visual Pathways and Place Memory in Insects: Why Flies Don't Bump Into Trees and Why Roaches Know Where They Are.*

Thomas J. Carew, Yale University. *Serotonergic Modulation of Aplysia Sensory Neurons: Mechanistic Parallels Between Development ant Memory Storage.*

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